ABSTRACT

THE IMPACT OF THYROID HORMONE THERAPY ON THE CHANGES IN ESTIMATED GLOMERULAR FILTRATION RATE IN CHRONIC KIDNEY DISEASE PATIENTS WITH SUBCLINICAL HYPOTHYROIDISM

DR.R.KANNAN, DR.V.T.PREMKUMAR, DR.K.MURALIDHARAN, DR.S.MURUGESAN, DR.M.RAJKUMAR, DR.KRISHNASAMY PRASAD.

DEPARTMENT OF GENERAL MEDICINE,

MADURAI MEDICAL COLLEGE, MADURAI

BACKGROUND

Thyroid hormones have a significant impact on kidney disease so it is important to consider the physiological association of thyroid dysfunction in relation to chronic kidney disease (CKD). CKD affects the pituitary-thyroid axis and the peripheral metabolism of thyroid hormones.

Primary hypothyroidism is common in CKD patients. Especially, the prevalence of SCH increases consistently with a decline in estimated glomerular filtration rate (eGFR).

Subclinical hypothyroidism is defined as an elevation in serum TSH concentration (normal range 5–10microIU/ml) conjunction with a normal serum free T4 concentration. With the decline in GFR, the prevalence of subclinical hypothyroidism increases consistently. One study showed that approximately 18% of the patients with CKD not

requiring dialysis have subclinical primary hypothyroidism. Tis finding is independently associated with a progressively lower estimated GFR. The prevalence of subclinical primary hypothyroidism increased from 7% to 17.9% in individuals whose GFR has decreased from ≥90 mL/min to 60 mL/min. In one clinical trial, the overall rate of a decline in the estimated GFR was signifcantly greater in those not treated with thyroid hormones compared to those who were treated with thyroid hormones.

With this introduction

AIMS AND OBJECTIVES

This study is undertaken to investigate the impact of thyroid hormone therapy on the changes in estimated glomerular filtration rate (eGFR) in subclinical hypothyroidism patients with chronic kidney disease.

METHODS

STUDY POPULATION:

50 ultrasound defined non diabetic chronic kidney disease patients attending outpatient and inpatient department in GRH, Madurai.

INCLUSION CRITERIA :

- All non diabetic chronic kidney disease patients with subclinical hypothyroidism.
- Age group of 18 to 65.

EXCLUSION CRITERIA:

- Hypothyroid patients already on treatment
- Diabetic patients
- Patients on concurrent treatment with lithium, amiodarone or iodine

STUDY DESIGN:

Prospective study

PERIOD OF STUDY:

6 Months (MAY 2018 – OCTOBER 2018)

METHODOLOGY:

50 CKD pts stage 1 – 4 (MDRD), >18 yrs, non DM ; ANA -ve , elev. TSH

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start levothyroxine 25 – 50 microg/d

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repeat T3,T4, TSH, urea and creatinine after 3 months

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titrate thyroxine dose to maintain TSH below lower

half of reference range

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repeat after 3 months

eGFR calculated by using MDRD formula.

RESULTS

- In this study total participants 50,in this 60% are males remaining 40% are females. Most of the person fall in 40 to 50 years of age
- The mean value of TSH at baseline, end of third and sixth month respectively 7.28, 6.47 and 6.06, with significant P value of <0.001
- The mean value of urea at baseline, end of third and sixth month respectively 74.72, 67.34 and 62.20, with significant P value of <0.001
- The mean value of creatinine at baseline, end of third and sixth month respectively 2.33, 2.03 and 1.92, with significant P value of <0.001
- The mean value of eGFR at baseline, end of third and sixth month respectively 32.16 , 37.97 and 40.21, with significant P value of <0.001

CONCLUSION

Thyroid hormone replacement for subclinical hypothyroidism may improve estimated glomerular filtration rate in chronic kidney disease patients. Thyroid hormone therapy may preserve renal function better in chronic kidney disease patients with subclinical hypothyroidism.

KEY WORDS

eGFR - estimated Glomerular Filtration Rate

CKD - Chronic Kidney Disease

MDRD - Modification of Diet in Renal Disease